

## Macroprudential Policy and Bank Systemic Risk: Does Inflation Targeting Matter?\*



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*Are Inflation Targeting (IT) countries better positioned to manage bank systemic risk? Recently, Belkhir et al. (2023) investigate macroprudential policy effects on bank systemic risk and the role of inflation targeting in such effects. Using bank-level data for 45 countries comprising various monetary and exchange rate regimes, they find that the tightening of most macroprudential tools—including DSTI and LTV limits, capital requirements, and reserve requirements—reduces bank systemic risk further under inflation targeting. The findings lend credence to the importance of coordination between macroprudential policy and monetary policy in promoting financial stability.*

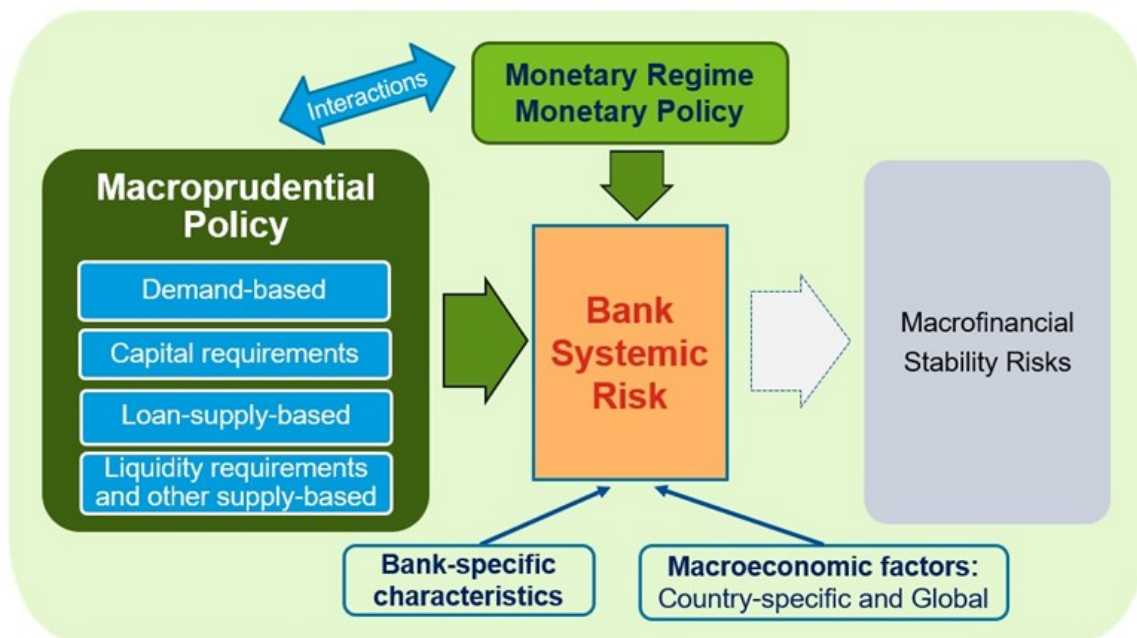
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## 1. Drivers of bank systemic risk and roles for macroprudential policy

We examine how the monetary policy framework (in particular, IT regime) could play the stabilizing role of macroprudential policy in the presence of other drivers in mitigating bank systemic risk which could be manifested into macrofinancial stability risks, as delineated in Figure 1.

**Figure 1: Drivers of Bank Systemic Risk**



*Note: "Interactions" indicates that the impact of macroprudential policy on bank systemic risk may be conditional on the underlying monetary regime and/or monetary policy.*

We employ the systemic risk measure that Brownlees and Engle (2017) proposed to capture the expected capital shortage of a financial institution in a crisis as it contributes to the undercapitalization of the financial system, generating economy-wide systemic risk. To explore the stabilizing effect of macroprudential tools conditional on the IT regime in the context of macrofinancial linkages, we disentangle the impacts of macroprudential policy tools on systemic risk from those of country-specific and global macroeconomic factors, and those of bank-specific characteristics (e.g., bank assets, ROA, and nonperforming loan ratio). Our empirical analysis covers each of the 22 individual MPP tools (Alam et al. 2019) deployed in 45 countries for 2000-2018.

## 2. Interactions between macroprudential policy and monetary policy for financial stability

Recent studies have highlighted the importance of coordination between macroprudential policy (MPP) and monetary policy (MP) in promoting financial stability and real economic activity (Cozzi et al. 2020; and Van der Gote 2020). The effectiveness of macroprudential measures and their impact on credit growth, aggregate demand, and inflation are closely linked to monetary policy. Changes in interest rates driven by MP can alter banks' risk-taking incentives and influence the stance of MPP.

This line of research suggests that the stance of macroprudential policy can shape the transmission of monetary policy. A higher level of capital requirements and a less leveraged financial system for financial soundness make the economy less responsive to monetary policy (Gambacota and Shin 2018; and Altavilla et al. 2020). In addition, interactions between MP and MPP are dynamic. Higher capital requirements, while beneficial in the long run for banks' safety, can have short-term costs by raising banks' funding costs and lowering credit supply (Mendicino et al. 2020). In such cases, the extent of monetary policy accommodation becomes crucial in mitigating the short-term adverse effects of tighter macroprudential policy, necessitating enhanced policy coordination.

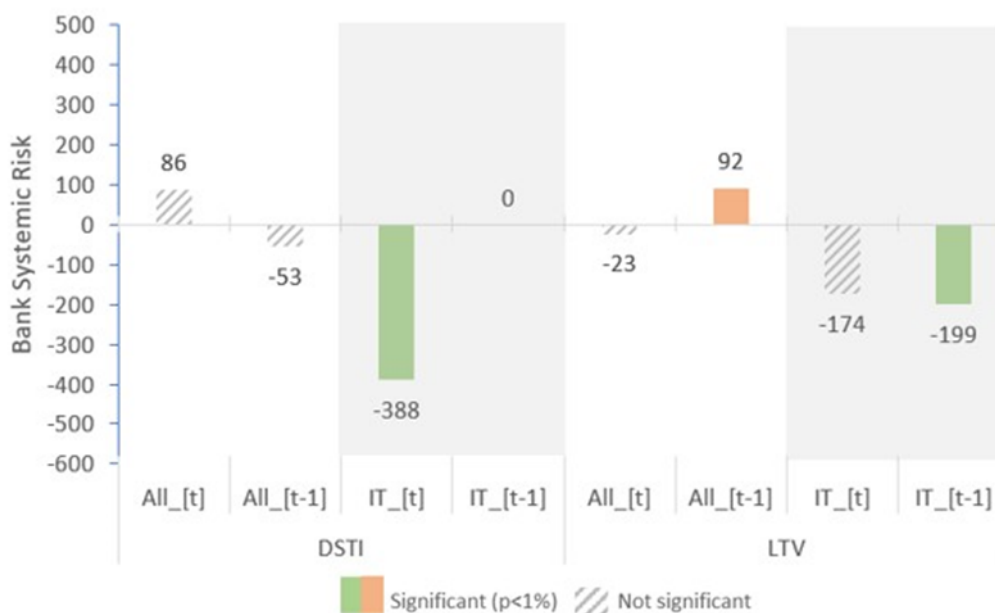
The literature also suggests complementarities between MP and MPP in shaping bank credit evolutions (Choi and Cook 2018; Kim and Mehrotra 2018; and Rubio and Yao 2020). Both policies can support each other in achieving price and financial stability when they affect aggregate demand in the same direction, while macroprudential tightening tends to occur to check overly escalated credit growth when inflation is below target. Over the economic and financial cycle, countercyclical macroprudential measures play a vital role in determining the appropriate level of interest rates. During booms, macroprudential regulations restrain lending and cool down the economy, which implies less needs for tighter monetary policy.

### 3. Do IT regimes help enhance macroprudential policy effectiveness and reduce bank systemic risk?

The recent studies on MPP posit that MPP effectiveness for financial stability is influenced by the coordination and compatibility with MP. IT regimes focus on interest rates in the conduct of MP to achieve price stability, allowing MPP to concentrate on financial stability goals. In addition, IT regimes exhibit higher levels of transparency and accountability, which enhance credibility and market discipline, conducive to financial stability (Papadamou et al. 2015; Fazio et al. 2018; and Louati and Boujelbene 2020).

Demand-based tools, such as debt-service-to-income (DSTI) and loan-to-value (LTV) ratio limits, are designed to influence the demand side of credit markets. Under IT regimes, when the output gap and inflation move in the same direction, MP works in tandem with MPP by curbing credit growth (Choi and Cook 2018). However, it is important to note that the effectiveness of loan restrictions can be counteracted by accommodative MP which leads to credit extensions under interest rate policy for IT. The existing studies demonstrate the effectiveness of these tools in reducing the procyclicality of credit growth (e.g., Kuttner and Shim 2016). Our empirical findings support the effectiveness of demand-based MPP in mitigating systemic risk stemming from banks primarily under IT regimes, as shown in Figure 2.

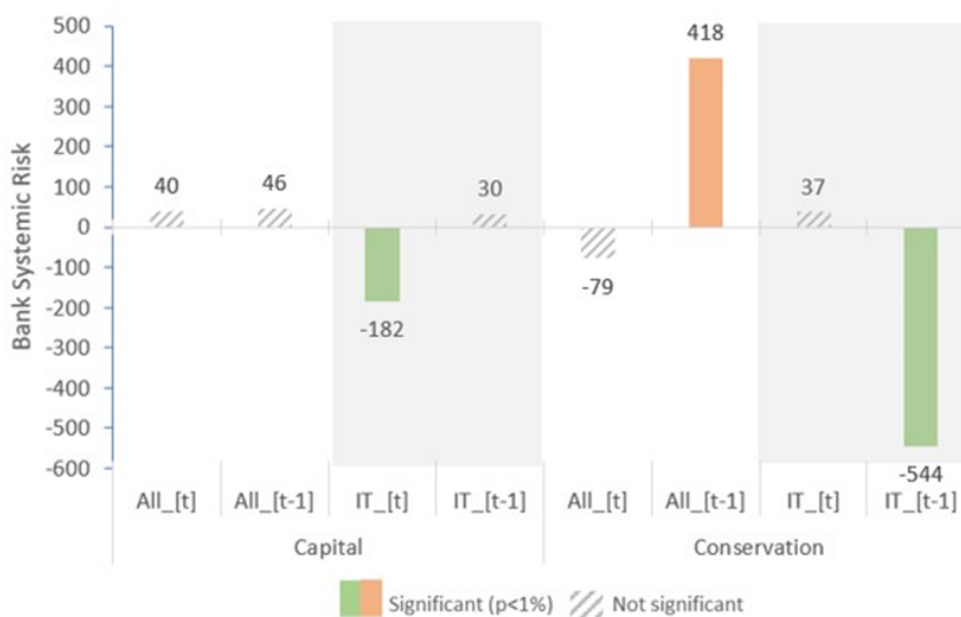
**Figure 2: Estimated Effects of Demand-Based Macroprudential Tools on Bank Systemic Risk**



Note: This figure is based on the estimated results of the benchmark model of Belkhir et al. (2023) to explain bank systemic risk by key drivers which include macroprudential policy tools interacting with an IT regime dummy as well as macroeconomic and bank-specific control variables (not reported here). The sample comprises 45 countries with various monetary and exchange rate regimes for 1999-2018. The vertical axis indicates estimated effects on the dependent variable, SRISK (Acharya et al. 2017), which has a mean of US\$ 131.69 billion. The reported values represent the estimated coefficients on the respective macroprudential tools deployed in period  $t$  and  $t-1$ , which take the value of +1 (-1) for tightening (loosening) and zero for no policy action, for all countries (ALL) and for IT-regime countries only (IT).

Capital requirement tools are implemented to ensure that banks maintain adequate capital buffers to absorb potential losses. These tools comprise various components, such as capital requirements (Capital), which represents the minimum capital banks are required to set aside based on the total risk-weighted assets, and Conservation buffers (Conservation), which pertains to the common equity tier 1 capital including the banks' cash and stock holdings. Research by Mendicino et al. (2020) demonstrates that Capital and Conservation measures effectively absorb bank losses during periods of economic stress and facilitate the flow of credit during downturns. As they may incur short-run costs as they lower credit supply and aggregate demand, however, the extent of monetary policy accommodation is important to smooth the costs of tighter macroprudential policy. Notably, these tools prove effective in mitigating systemic risk primarily under IT regimes, as shown in Figure 3.

**Figure 3: Estimated Effects of Capital Requirements on Bank Systemic Risk**



Note: See notes to Figure 2.

Loan-supply-based tools aim to limit the volume and expansion of bank lending. These measures, however, can encourage higher risk-taking behavior among banks as they seek alternative avenues to strengthen their balance sheets such as investing in riskier financial products (Altavilla et al. 2020). Consequently, it is observed that the one-year-lagged limits on credit growth (LCG) increase bank systemic risk. Notably, within our sample of IT regimes, we did not observe instances where these measures were tightened, resulting in an insignificant coefficient. Loan restrictions (LoanR) could be conditioned on loan and bank characteristics (e.g., the maturity, the type of interest rate, and mortgage banks), rather than restricting lending growth outright (Alam et al. 2019). We find that, in general, these tools are effective in mitigating bank systemic risk. However, for IT regimes, these measures are found to be ineffective. For our sample period from 2000 to 2018, accommodative monetary policy in IT regimes coincided on average with tightened LoanR. We view that the endogenous nature of credit extensions given the policy rate under IT regimes blurs the effectiveness of loan restrictions, leading to a positive coefficient for the contemporaneous term under IT.

Liquidity requirements and other supply-based tools including reserve requirements (RR), which has been most frequently deployed by emerging markets (Alam et al. 2019), can help mitigate financial stability risks, but their effectiveness in reducing bank systemic risk varies. Notably, we find that the IT regime helps RR contain bank systemic risk. Tighter RR implies adverse effects on banks' cost of funding and profitability and thus on bank systemic risk. However, such effects are mitigated under IT regimes. In the sample considered these two policies are coordinated: when MP is tightened, RR can also be deployed to improve bank portfolio, e.g., by containing wholesale funding and FX-denominated deposits. Hence, RR might be more effective under IT due to complementarities with MP, as RR can be used as a tool to influence money supply and credit creation, helping control inflationary pressures.

Also, our results indicate that bank systemic risk is significantly reduced under the IT regime, reflecting that the IT regime can be more effective in enhancing banks' risk profiles, potentially due to embedded transparency and accountability under the IT institutional setup (Fazio et al. 2018; and Louati and Boujelbene 2020).

Furthermore, we explore how interactions between MP and MPP affect bank systemic risk. Our findings support complementarities between MP and a large set of MPP tools for financial stability: see Belkhir et al. (2023) for details.

#### **4. Concluding Remarks**

We empirically show using the bank-level sample of 45 countries that macroprudential policy can reduce systemic risk further when a central bank pursues IT. We find that, IT enhances the effectiveness of most macroprudential tools including DSTI and LTV limits, and capital requirements, while it helps reduce bank systemic risk by itself. We also find that monetary policy could reinforce the effectiveness of many macroprudential policy tools.

Hence, our empirical findings provide new evidence that the IT regime reinforces the effectiveness of macroprudential policies by mitigating bank systemic risk. Also, our analysis provides additional empirical support to the existing analyses on coordination between monetary and macroprudential policies to mitigate financial stability risks. ■

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